CLAIMS

What is claimed is:

1. A variable capacity rotary compressor, comprising:

a partition plate;

a housing installed in a hermetic casing, and partitioned into first and second compression chambers having different capacities by the partition plate;

a rotating shaft to rotate in the first and second compression chambers;

first and second eccentric units mounted to the rotating shaft to be placed in the first and second compression chambers, respectively, and to execute a compression rotation and an idle rotation according to a rotating direction of the rotating shaft, the first and second eccentric units being oppositely operated;

first and second vanes installed in the first and second compression chambers, respectively; and

a pressure control unit to apply a pressure of an outlet side of the compressor to one of the first and second compression chambers which executes the idle rotation, the pressure control unit including:

a path control channel vertically provided through the partition plate to be placed at a position outside the first and second compression chambers;

a valve member movably set in the path control channel;

a communicating path to make an interior of the hermetic casing communicate with the path control channel; and

first and second inlet channels provided at predetermined positions of the housing, with interiors of the first and second compression chambers communicating with the path control channel through the first and second inlet channels, respectively.

2. The rotary compressor according to claim 1, wherein the pressure control unit further comprises:

first and second valve seats, the first and second valve seats being seated in opposite ends of the path control channel and each having a central hole.

3. The rotary compressor according to claim 2, wherein the housing comprises:

a first housing part to define the first compression chamber therein; and

a second housing part to define the second compression chamber therein, the first and second housing parts mounted to opposite surfaces of the partition plate, respectively, with the first and second inlet channels being provided on surfaces of the first and second housing parts which are in contact with the partition plate, respectively, to have a predetermined depth.

4. The rotary compressor according to claim 3, wherein the first and second valve seats are respectively supported by the first and second housing parts to be prevented from being removed from the path control channel.

5. The rotary compressor according to claim 1, wherein outlets of the first and second inlet channels are placed positions which are an angularly spaced apart from the first and second vanes, respectively, within an angular range of 140 ~220°.

6. The rotary compressor according to claim 1, wherein the valve member has a shape of a flat plate.

7. The rotary compressor according to claim 1, wherein the first and second eccentric units comprise:

first and second eccentric cams mounted to an outer surface of the rotating shaft to be placed in the first and second compression chambers, respectively;

first and second eccentric bushes to rotatably fit over the first and second eccentric cams, respectively;

first and second rollers to rotatably fit over the first and second eccentric bushes, respectively; and

a locking unit to make one of the first and second eccentric bushes be eccentric from the rotating shaft while making a remaining one of the first and second eccentric bushes be released from eccentricity from the rotating shaft, according to a rotating direction of the rotating shaft, the first and second eccentric bushes being eccentric in opposite directions.

8. The rotary compressor according to claim 7, further comprising:

a cylindrical connecting part to connect the first and second eccentric bushes to each other while the first and second eccentric bushes are eccentric in the opposite directions; and

an eccentric part mounted to the outer surface of the rotating shaft between the first and second eccentric cams to be eccentric from the rotating shaft in a same direction of the first and second eccentric cams.

9. The rotary compressor according to claim 8 wherein the locking unit comprises:

a locking slot provided around the cylindrical connecting part; and

a locking pin mounted to the eccentric part of the rotating shaft to engage with the locking slot.

10. The rotary compressor according to claim 1 further comprising:

upper and lower flanges to rotatably support the rotating shaft.

11. The rotary compressor according to claim 3, wherein the partition plate is interposed between the first and second housing parts to be partitioned into the first and second compression chambers.

12. The rotary compressor according to claim 9, wherein the locking pin is mounted to a flat surface of the eccentric part via a screw-type fastening to project from the flat surface of the eccentric part.

13. The rotary compressor according to claim 12, wherein the locking slot is provided around a part of the cylindrical connecting part which connects the first and second eccentric bushes to each other.

14. The rotary compressor according to claim 13, wherein the locking pin engages with the locking slot to make one of the first and second eccentric bushes be eccentric from the rotating shaft while a remaining one of the first and second eccentric bushes are released from eccentricity from the rotating shaft according to a rotating direction of the rotating shaft.

15. The rotary compressor according to claim 14, further comprising:

locking parts provided at opposite ends of the locking slot,

wherein when the rotating shaft is rotated while the locking pin mounted to the eccentric part of the rotating shaft engages with the locking slot, the locking pin is rotated within the locking slot to be locked by at least one of the locking parts.

16. The rotary compressor according to claim 15, wherein when the locking pin is locked by at least one of the locking parts of the locking slot, one of the first and second eccentric bushes is eccentric from the rotating shaft and a remaining one of the first and second eccentric bushes is released from eccentricity from the rotating shaft, allowing a compression operation to be executed in one of the first and second compression chambers and an idle operation to be executed in a remaining one of the first and second compression chambers.

17. The rotary compressor according to claim 1, further comprising:

a path control unit to control a refrigerant intake path to make a refrigerant fed from a refrigerant inlet pipe be drawn into an inlet port of the first compression chamber or an inlet port of the second compression chamber.

18. The rotary compressor according to claim 17, wherein the path control unit comprises:

a hollow cylindrical body;

a valve unit installed in the hollow cylindrical body;

an inlet provided at the body, to be connected to the refrigerant inlet pipe;

first and second outlets provided on opposite sides of the body; and

two pipes connected to the inlet port of the first compression chamber and the inlet port of the second compression chamber, respectively, and connected to the first and second outlets, respectively.

19. The rotary compressor according to claim 18, wherein the valve unit comprises:

a valve seat having a cylindrical shape and opened at both ends thereof;

first and second valve members installed on both sides of the hollow cylindrical body, to axially reciprocate in the bow to open or close both ends of the valve seat; and

a connecting member to connect the first and second valve member to each other, to allow the first and second valve members to move together.

20. The rotary compressor according to claim 19, wherein when a compression operation is executed in either of the first or second chambers, the first and second valve members set in the hollow cylindrical body move in a direction toward one of the first and second outlets having a lower pressure due to a difference in pressure between the first and second outlets automatically changing the refrigerant intake path.

21. The rotary compressor according to claim 4, wherein the central hole of the first valve seat and the central hole of the second valve seat are opened and closed by the valve member, and communicate with the first and second compression chambers, respectively.

22. A variable capacity rotary compressor, comprising:

a partition plate;

a housing partitioned into first and second compression chambers having different capacities by the partition plate;

a rotating shaft to rotate in the first and second compression chambers;

first and second eccentric units mounted to the rotating shaft to be placed in the first and second compression chambers, respectively, and to execute a compression rotation and an idle rotation according to a rotating direction of the rotating shaft, the first and second eccentric units being oppositely operated; and

a pressure control unit to apply a pressure of an outlet side of the compressor to one of the first and second compression chambers which executes the idle rotation, the pressure control unit, including:

a path control channel vertically provided through the partition plate to be placed at a position outside the first and second compression chambers;

a valve member set in the path control channel;

a communicating path to make the path control channel communicate with the outlet side of the compressor; and

first and second inlet channels to make the path control channel communicate with interiors of the first and second compression chambers.

23. A variable capacity rotary compressor including a housing installed in a hermetic casing and partitioned into first and second compression chambers having different capacities by a partition plate the compressor comprising:

a rotating shaft to rotate in the first and second compression chambers; and

a pressure control unit to apply a pressure of an outlet side of the compressor to one of the first and second compression chambers which executes the idle rotation, allowing an internal pressure of the one of the first and second compression chambers which executes the idle rotation to be equal to an internal pressure of the hermetic casing.